

**CLAIMS**

What is claimed is:

- 1           1.     A medical appliance for placement within a portion of  
2 the anatomy of a patient, the appliance comprising:  
3                 a scaffolding, the scaffolding configured to define a  
4                 substantially cylindrical member having a distal end and a  
5                 proximal end and extending longitudinally there between,  
6                 forming a lumen there through, along the longitudinal extension  
7                 of the appliance the scaffolding having an interior and an  
8                 exterior surface comprising struts with geometrical patterns  
9                 formed by angles, wherein the angles determine the relative  
10                flexibility of the medical appliance such that the appliance  
11                conforms to the topography of a target lumen and when  
12                pressure is exerted along varying points of the longitudinal  
13                extension of the appliance, the appliance does not undesirably  
14                foreshorten or elongate.
- 1           2.     The medical appliance of claim 2, wherein the scaffolding  
2 further comprises a coating coupled with the scaffolding such that  
3 both the struts and the area between the struts are coated, the  
4 coating of sufficient thickness to prevent the medical appliance from  
5 becoming epithelialized when installed in the desired portion of the  
6 patient's anatomy.
- 1           3.     The medical appliance of claim 2, wherein the coating is  
2 substantially hydrophobic.

1           4.     The medical appliance of claim 2, wherein the coating is  
2 substantially hydrophilic.

1           5.     The medical appliance of claim 3, wherein the coating is  
2 hydroscopic.

1           6.     The medical appliance of claim 4, wherein the coating is  
2 substantially hydroscopic.

1           7.     The medical appliance of claim 1, wherein at least one  
2 strut defines an aperture there through.

1           8.     The medical appliance of claim 7, wherein the at least  
2 one aperture defines an eyelet of sufficient diameter to receive  
3 suture.

1           9.     The medical appliance of claim 8, wherein the eyelet  
2 diameter is at least 300 $\mu$ m.

1           10.    The medical appliance of claim 2, wherein the coating  
2 does not inhibit flexing or radial expansion of the medical appliance.

1           11.    The medical appliance of claim 10, wherein the coating is  
2 coupled with the medical appliance from the interior surface of the  
3 scaffolding outward.

1           12.    The medical appliance of claim 11, wherein the coating  
2 is coupled with the medical appliance from the exterior surface of the  
3 scaffolding inward.

1           13.    The medical appliance of claim 2, wherein the coating is  
2 coupled with the medical appliance from the exterior surface of the  
3 scaffolding inward.

1           14.    The medical appliance of claim 13, wherein the coated  
2   struts on the exterior surface of the scaffolding are raised with respect  
3   to the coated region between the struts of the medical appliance.

1           15.    The medical appliance of claim 14, wherein the coated  
2   strut is raised between  $1 \text{ \AA}$  to  $10^6 \text{ \AA}$  with respect to the coated region  
3   between the struts of the medical appliance.

1           16.    The medical appliance of claim 14, wherein the relative  
2   extent to which the coated struts are raised with respect to the  
3   coated regions between the struts is sufficient to allow cilia function  
4   at the cite of implantation.

1           17.    The medical appliance of claim 1, wherein the dimensions  
2   of the scaffolding geometry determine torsionality of the medical  
3   appliance.

1           18.    The medical appliance of claim 1, wherein the scaffolding  
2   is formed of a memory capable alloy.

1           19.    The medical appliance of claim 18, wherein the  
2   scaffolding is electropolished.

1           20.    The medical appliance of claim 1, wherein along the  
2   longitudinal expanse of the scaffolding the medical appliance further  
3   comprise a plurality of flanges that define apertures there through.

1           21.    The medical appliance of claim 1, further comprising a  
2   connector coupled with portions of the geometrical patterns, the  
3   connector comprising a crossing member and a plurality of leg  
4   members extending from the crossing member.

1           22. The medical appliance of claim 21, wherein the  
2 connector further comprises a rectangular detent extending from a  
3 leg thereof.

1           24. The medical appliance of claim 21, wherein the length of  
2 the leg members and the degree of the angle at which the legs  
3 extend from the crossing member determines the relative flexibility of  
4 the medical appliance.

1           25. The medical appliance of claim 23, wherein the angle at  
2 which the leg members extend from the crossing member is greater  
3 than 90°.

1           26. The medical appliance of claim 25, wherein the medical  
2 appliance is relatively rigid.

1           27. The medical appliance of claim 25, wherein the angle at  
2 which the leg members extend from the crossing member is 90° or less.

1           28. The medical appliance of claim 26, wherein the medical  
2 appliance is relatively flexible.

1           29. The medical appliance of claim 1, further comprising an  
2 additional distal end wherein the medical appliance forms a  
3 substantially Y-shape.

1           30. The medical appliance of claim 29, wherein at least one  
2 strut defines an aperture there through.

1           31. The medical appliance of claim 30, wherein the at least  
2 one aperture defines an eyelet of sufficient diameter to receive  
3 suture.

1           32.    The medical appliance of claim 31, wherein the eyelet  
2   diameter is at least 300 $\mu$ m.

1           33.    The medical appliance of claim 29, wherein along the  
2   longitudinal extension of the appliance, the scaffolding forms  
3   geometrical patterns.

1           34.    The medical appliance of claim 33, wherein the  
2   scaffolding further comprises a coating coupled with the scaffolding,  
3   the coating of sufficient thickness to prevent the medical appliance  
4   from becoming epithelialized when installed in the desired portion of  
5   the patient's anatomy.

1           35.    The medical appliance of claim 34, wherein the  
2   dimensions of the scaffolding geometry determine torsionality of the  
3   medical appliance.

1           36.    The medical appliance of claim 35, wherein the  
2   scaffolding is formed of a memory capable alloy.

1           37.    The medical appliance of claim 35, wherein the  
2   scaffolding is electropolished.

1           38.    The medical appliance of claim 34, wherein near the  
2   distal and proximal ends of the scaffolding the medical appliance  
3   further comprise a plurality of flanges that define apertures there  
4   through.

1           39.    The medical appliance of claim 29, further comprising a  
2   connector member coupled with portions of the geometrical  
3   patterns, the connector comprising a crossing member and a plurality  
4   of leg members extending from the crossing member.

1        40. The medical appliance of claim 38, wherein the  
2 connector further comprises a rectangular detent extending from a  
3 leg thereof.

1        41. The medical appliance of claim 39, wherein the length of  
2 the leg members or the degree of the angle at which the legs extend  
3 from the crossing member positively contributes to the relative  
4 flexibility of the medical appliance.

1        42. The medical appliance of claim 41, wherein the angle at  
2 which the leg members extend from the crossing member is greater  
3 than 90°.

1        43. The medical appliance of claim 42, wherein the medical  
2 appliance is relatively rigid.

1        44. The medical appliance of claim 41, wherein the angle at  
2 which the leg members extend from the crossing member is 90° or less.

1        45. The medical appliance of claim 44, wherein the medical  
2 appliance is relatively flexible.

1        46. A method of coating a medical appliance, comprising  
2 the steps of:  
3            providing a mold having an internal and an external  
4            diameter;  
5            providing a medical appliance comprising a scaffolding,  
6            the scaffolding configured to define a substantially cylindrical  
7            member having a distal end and a proximal end and extending  
8            longitudinally there between, forming a lumen there through,  
9            along the longitudinal extension of the appliance the  
10           scaffolding having an interior and an exterior surface with

11 geometrical patterns formed by angles, wherein the angles  
12 determine the relative flexibility of the medical appliance such  
13 that the appliance conforms to the topography of a target  
14 lumen and when pressure is exerted along varying points of the  
15 longitudinal extension of the appliance, the appliance does not  
16 undesirably foreshorten or elongate;

17 inserting the medical appliance into the internal  
18 diameter of the mold;

19 applying a polymer to the interior surface of the medical  
20 appliance; and

21 annealing the polymer to the stent by applying heat to  
22 the polymer.

1 47. The method of claim 46, further comprising the step of  
2 applying a polymer to the exterior surface of the medical appliance.

1 48. The medical appliance of claim 46, further comprising an  
2 additional distal end wherein the medical appliance forms a  
3 substantially Y-shape.